

1. An apparatus for maintaining constant force engagement between a finishing tool and a workpiece, the apparatus comprising:
a biasing device couplable to a robotic manipulator for articulation about and along at least two orthogonal axes relative to the workpiece;
5 a support arm extending from said biasing device and having an inner end operatively coupled to said biasing device for movement in at least two orthogonal directions toward the workpiece, and having a distal end; and
a tool holder disposed on a distal end of said support arm and configured to support the finishing tool;
10 said biasing device configured to move said support arm to engage the finishing tool against the workpiece at a constant force.
2. The apparatus of claim 1, wherein said biasing device comprises:
a rotary actuator having an output shaft; and
a bearing assembly operatively coupled to said support arm and engaging said output shaft, whereby rotation of said output shaft moves said
5 support arm to engage the workpiece with a constant force.
3. The apparatus of claim 1, further comprising a counterweight disposed on said support arm, generally opposite said tool holder, to offset the mass of said tool holder and the finishing tool supported by said support arm.

4. The apparatus of claim 2, wherein said rotary actuator comprises:
at least one piston member actuatable by a pressure source;
a rack gear coupled to said piston for movement in response to
actuation of said piston; and
- 5 a pinion gear coupled to said output shaft and engaging said rack
gear, whereby actuation of said piston causes said output shaft to rotate.
5. The apparatus of claim 2, wherein said rotary actuator includes at
least one vane coupled to said output shaft, whereby said output shaft is
rotated by placing said vane in communication with a source of pressurized
fluid.
6. The apparatus of claim 1, further comprising a robotic manipulator
adapted to be coupled to said biasing device and to articulate said biasing
device, said support arm, and said tool holder relative to the workpiece while
said biasing device moves said support arm to engage the finishing tool against
- 5 the workpiece at a constant force.